Item 5

COMMISSION FILE NO: 25-034-3 **DATE INTRODUCED:** March 10, 2025

INTRODUCED BY: Executive Director (Signature on File in the Office of the Commission)

REFERRED BY COMMISSION CHAIRPERSON TO: Operations Committee

RELATING TO: Change Order Request, Contract S02015C01, Aeration System Upgrade at South Shore Water Reclamation Facility, Restore the Executive Director's Original Delegated Authority, and Approve Changes in Total Project Cost

SUMMARY:

The Commission is requested to authorize the Executive Director to execute a change order to Contract S02015C01, Aeration System Upgrade at South Shore Water Reclamation Facility (SSWRF), with C.D. Smith Construction, Inc., (CDSmith) in an amount not to exceed $412,000 and to restore the Executive Director's original delegated authority.

Further, the Commission is requested to increase the total project cost (TPC) for Project S02015, Aeration System Upgrade, by $3,482,000 for an amended TPC of $86,898,000 and to make a corresponding change to the TPC of Project M99001, Allowance for Cost and Schedule Changes.

SSWRF uses conventional primary clarification and activated sludge systems to remove suspended solids and organic material from wastewater. Primary clarification removes organic material and suspended solids from the wastewater as it flows very slowly through large surface area tanks. Activated sludge involves growing microorganisms in aeration basins and settling in secondary clarifiers to further remove organic material and suspended solids.

A functioning aeration system is critical to achieve proper biological treatment in the aeration basins and settling in the secondary clarifiers. A poorly functioning system could lead to reduced treatment capacity, poor effluent quality, and reduced ability to meet the Wisconsin Pollutant Discharge Elimination System effluent permit limits and for Veolia Water Milwaukee, LLC, (VWM) to meet its contracted effluent limits.

ATTACHMENTS: **BACKGROUND** ☐ **KEY ISSUES** ☐ **RESOLUTION** ☒
FISCAL NOTE ☒ **S/W/MBE** ☐ **OTHER** ☐ ____

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COMMITTEE ACTION: _____ **DATE:** _____

COMMISSION ACTION: _____ **DATE:** _____

SSWRF has 28 aeration basins. Each aeration basin is 378 feet long by 30 feet wide by 15 feet deep, holding approximately 1.25 million gallons. The total volume of all aeration basins is approximately 35 million gallons. Aeration basins 3 through 26 have been in service since 1974. Aeration basins 1, 2, 27, and 28 have been in service since 1982. The existing aeration basins are equipped with air piping and approximately 2,500 fine bubble diffusers to supply oxygen.

In July 2023, the Commission awarded Contract S02015C01 to CDSmith in the amount of $74,373,000. Under this contract, CDSmith is:

- Removing false floors and ceramic diffuser layers in existing aeration basins.
- Replacing the diffusers in 28 aeration basins with a new tapered grid of standard membrane diffusers.
- Replacing existing air piping, valves, and flow meter equipment back to the 90-inch main air header.
- Rehabilitating corroded areas of the main air header near the aeration basins.
- Electrically isolating the main air header from the aeration buildings for cathodic protection from corrosion.
- Constructing selector zones consisting of a baffle wall and mixer in each basin.
- Replacing the plug flow influent piping, flow meter, and control valve at each aeration basin.
- Replacing the step feed influent control valve at each aeration basin.
- Constructing four scum boxes with gates along the aeration basin effluent channels.
- Rehabilitating the aeration basin concrete walls and walkways.
- Performing associated electrical, instrumentation, and controls work.
- Providing weather protection and heating for construction to continue during the winter months.

SUMMARY (Cont'd)

Change Order Request, Contract S02015C01, Aeration System Upgrade at South Shore Water Reclamation Facility, Restore the Executive Director's Original Delegated Authority, and Approve Changes in Total Project Cost

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As the contract progressed, multiple change orders have been executed under the Executive Director's delegated change order authority to address additional scope items necessary to complete the project. The work under these change orders consists of:

- Rerouting branch piping serving aeration basins 2 and 27.
- Providing plug valve stem offsets and minor utility relocations.
- Increasing the size of new programmable logic controller enclosures.
- Modifying the earth retention system to construct the new scum boxes.
- Providing man doors in the new baffle walls.
- Rerouting existing power feeds.
- Additional wiring for electrical outlets and instrumentation and controls.
- Widening air pipe support plates.
- Providing stainless steel hardware on new pipe couplings.
- Modifying framing on access hatch cover plates.
- Providing davit crane wall mounting instead of floor mounting.
- Providing additional supports at air valve pedestals.
- Relocating existing control switches and transmitters.
- Providing removeable handrails for maintenance activities.
- Relocating two light poles.
- Managing mercury-contaminated air branch header piping.

As part of the contract, CDSmith is required to remove and replace 350 feet of air branch piping on each aeration basin. After CDSmith removed air branch piping on aeration basin 21, a small amount of uncontained mercury was discovered inside the pipe. Staff immediately responded and properly disposed this waste. Staff suspects the source of mercury was previously removed manometer instruments which conventionally used to measure air pressure in the pipes.

The District tested the air in 27 other air branch pipes and detected traces of mercury in four of them (serving aeration basins 8, 10, 20, and 22). The federal Resource Conservation and Recovery Act (RCRA) classifies solid waste containing mercury in specific forms and concentrations as a hazardous waste requiring special handling and disposal, but also carves out certain exceptions. The District's approach in continuing the aeration basin project navigates these requirements and prioritizes protecting human health and the environment.

Staff has worked with CDSmith to develop a waste management plan, which was subsequently reviewed by both District staff and the District's environmental consultant. This plan includes a 20+-step process of isolating, visual inspecting, and testing for mercury vapor concentrations in the air branch pipes for the presence of mercury at 25-foot intervals. If mercury is detected, pipe sections will be separately isolated, removed, decontaminated, reanalyzed, and disposed. If no mercury is detected, the pipe section will be removed and disposed by sending to a recycling center. The actual costs for the work will be on a time and material basis and will depend upon the number of pipe sections in which mercury is detected.

Air branch piping for three of the four mercury-contaminated branch pipes (basins 8, 20, and 22) are planned for removal in 2025 and the summer 2026. Air branch piping for the fourth mercury-contaminated branch pipe (basin 10) is scheduled for removal in spring 2027.

The worst case cost scenario of having to remediate mercury throughout all the first three air branch headers is estimated to cost $642,000. To allow the contractor to begin this work, under the Executive Director's change order authority, staff has executed a change order in the amount of $230,000. That change order utilizes most of the Executive Director's remaining change order authority. This Commission requested change order of $412,000 represents the remainder of the $642,000. If the worst case cost scenario occurs and the funding is not adequate to perform work on the fourth air branch header, staff will then request an additional change order prior to work beginning on the remaining header in 2027.

	AMOUNT	**PERCENTAGE INCREASE OVER ORIGINAL CONTRACT**	**AUTHORIZED BY**	**SWMBE**
Original Contract	$74,373,000		Commission	14.3%
Previous Change Orders	$394,859	0.5%	Executive Director and Commission	9.5%
Requested Change Order	$412,000	0.6%	Request of Commission	0%
Total Change Orders	$806,859	1.1%		4.6%
TOTAL	**$75,179,859**			**14.2%**

SUMMARY (Cont'd)

Change Order Request, Contract S02015C01, Aeration System Upgrade at South Shore Water Reclamation Facility, Restore the Executive Director's Original Delegated Authority, and Approve Changes in Total Project Cost

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For construction contracts greater than or equal to $500,000, the Commission has delegated to the Executive Director the authority to make changes up to $400,000 or 10% of the original contract price, whichever is less. For this contract, a limit of $400,000 prevails. After issuing a change order to begin the mercury decontamination, the Executive Director will have utilized approximately $394,859 of this authority, leaving a balance of $5,141. The request to restore the Executive Director's authority is in case any additional construction changes requiring the Executive Director's change authority are necessary. Without this restored authority, work may need to stop while staff obtains necessary change order authority from the Commission.

During construction, four aeration basins are removed from service at a time to complete the upgrades. The upgrades will be completed in seven phases, with the last phase scheduled for completion in 2028. Removing four aeration basins from service by itself does not reduce process capacity, but it does eliminate built in process redundancy; however, additional aeration basins beyond the four may be out of service for other operational or maintenance purposes, thus affecting the activated sludge process capacity.

To mitigate these impacts, staff is enhancing the performance of the primary clarifiers by modifying the existing primary clarifier chemical addition strategy. Improving primary clarifier performance immediately upstream of the aeration basins reduces the load on the basins and should help overall plant performance. The chemical addition changes include:

- Adding a chemical flocculant to the wastewater before it enters primary clarifiers.
- Dosing ferric chloride in lieu of ferrous chloride in the primary clarifiers.

Under the Operations and Maintenance Agreement with VWM, the District directly pays VWM for chemical use. Since use of these chemicals is resulting from Project S02015, Aeration System Upgrade, the costs for these chemicals can be charged to Project S02015, as opposed to being charged to the District's operations and maintenance budget. These chemical costs should be included in Project S02015's TPC. While the polymer costs are budgeted for, staff inadvertently did not budget for the incremental cost of the ferric chloride (over the cost of ferrous chloride).

Staff requests to increase the TPC as follows:

- The previously authorized $230,000 change order plus the requested $412,000 change order, which were not budgeted.
- The actual incremental costs for ferric chloride over the cost of ferrous chloride for 2024 and estimated for 2025. These total $2,840,000.

The requested TPC increase is the sum of the above items. Staff's estimate of the incremental ferric chloride costs beyond 2025 will be added to the Project's TPC as part of the 2026 budget process.

RESOLUTION

Change Order Request, Contract S02015C01, Aeration System Upgrade at South Shore Water Reclamation Facility, Restore the Executive Director's Original Delegated Authority, and Approve Changes in Total Project Cost

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RESOLVED, by the Milwaukee Metropolitan Sewerage Commission, that the Executive Director is authorized to execute a change order to Contract S02015C01, Aeration System Upgrade at South Shore Water Reclamation Facility, with C.D. Smith Construction, Inc., in an amount not to exceed $412,000, and that the Executive Director's original delegated authority is restored.

FURTHER RESOLVED, by the Milwaukee Metropolitan Sewerage Commission, that the total project cost for Project S02015, Aeration System Upgrade, is increased by $3,482,000 for an amended total project cost of $86,898,000, and that a corresponding change is made to the total project cost for Project M99001, Allowance for Cost and Schedule Change.